

## **EXECUTIVE SUMMARY**

### **ES.1 INTRODUCTION**

This economic analysis (EA) presents the U.S. Environmental Protection Agency's (EPA's) evaluation of the incremental compliance costs and economic impacts of four options for controlling discharges of stormwater during construction and development (C&D) activities. These options are known as Option 1, Option 2, Option 3, and Option 4.

- Option 1 requires enhanced inspection requirements and certifications of best management practices (BMPs).
- Option 2 comprises technology-based effluent limitations guidelines and standards (ELG) for stormwater discharges from construction sites where 5 acres or more of land are disturbed. It also includes enhanced inspection requirements and certification of BMPs.
- Option 3 would not establish new regulations, but would instead continue to rely on the existing National Pollutant Discharge Elimination System (NPDES) stormwater regulations.
- Option 4 is identical to Option 2 except that the inspection and certification requirements are not included.

EPA has chosen Option 3 for the Final Action in this rulemaking process. This choice results in no costs, no impacts, and no benefits to the C&D industry or the U. S. economy. This executive summary acknowledges this choice, whereas the body of the EA presents the four options without reference to this decision.

The C&D industry is currently regulated under NPDES permit requirements for construction activities that disturb more than 1 acre. C&D activities in states where EPA is the permitting authority are subject to EPA's Construction General Permit (CGP), which describes the permit requirements under EPA's Phase I stormwater regulations (covering sites in which 5 or more acres of land are disturbed) and Phase II regulations (covering sites in which 1 to 5 acres of land are disturbed). Delegated states are authorized to issue NPDES permits and have their own permitting requirements. In many of these states,

the requirements are generally equivalent to the EPA CGP requirements. The analyses in this EA assume that C&D activities are fully compliant with Phase I and Phase II stormwater requirements. Therefore, only the requirements of Options 1, 2 and 4 that are incremental to Phase I and Phase II stormwater requirements are associated with costs, impacts, or benefits.

The Phase I and II rules require construction site operators to obtain permits to manage construction site storm water runoff. The EPA CGP requires that construction site owners and operators prepare a stormwater pollution prevention plan (SWPPP) and install a range of BMPs. Specifically, the EPA CGP requires that sediment basins designed to control runoff from the 2-year, 24-hour storm or 3,600 cubic feet per acre be installed on drainage areas of 10 or more acres. For smaller sites, the EPA CGP specifies that smaller sediment basins or sediment traps are to be used, or equivalent control measures. The EPA CGP also requires that site owners and operators conduct periodic inspections of the site, stabilize exposed soil areas, and conduct maintenance of BMPs. Many state general permits contain similar provisions, although the specific design requirements vary.

Options 2 and 4 would have established the specific provisions of the EPA CGP as minimum requirements for all construction sites nationwide. Option 2 would also have required a number of enhanced site inspection and certification provisions. These provisions would have required inspections of individual BMPs, as well as certifications when a number of specific activities (such as completing a SWPPP, installing BMPs, and stabilizing exposed soils) have been completed. Option 1 would only have required enhanced site inspections and certifications. Option 1 would have generally applied to all sites with 1 or more acres of disturbed land, while Options 2 and 4 would have generally applied to all sites with 5 or more acres of disturbed land.

The industries that would have been affected by the regulatory options include land subdivision and development, single-family housing construction, multifamily housing construction, manufacturing and industrial building construction, commercial and institutional building construction, and a variety of heavy construction industries, such as highway construction, excavation contractors, and wrecking and demolition contractors. EPA gathered information on these sectors from a variety of sources, including the 1997 Census of Construction (the 2002 Census is not yet available). EPA believes the 1997 Census provides a reasonable basis for characterizing the industries that could have been affected by the Final Action. EPA also used the U.S. Department of Agriculture's Natural Resource Inventory to determine

the amount of acreage disturbed annually, data collected from NPDES permits, and information collected during focus group meetings held with representatives of the National Association of Home Builders (NAHB). Other sources of data are discussed where data are presented.

EPA received 105 comments on the June 2002 proposal. Some of these comments focused on the data EPA used to develop the economic analysis and, in some cases, commenters provided alternative data. After EPA determined that alternative sources of data suggested by commenters were appropriate, EPA integrated these new data into the economic analysis. Some commenters expressed concern about sources of data but could not provide any alternatives. Where no alternative data were suggested, EPA retained the existing data.

In addition to issues related to data, commenters expressed concern that impacts of this rule would be too high, had a low cost-benefit ratio, or ignored certain segments of the industry. EPA acknowledges that impacts would have occurred under Options 2 or 4, but does not provide conclusions on the economic achievability of these options here and refers readers to EPA's document, Summary of Public Comments with Responses Based on the Proposed Effluent Limitations Guidelines for Construction and Development (Comment Response Document). A low cost-benefit ratio does not preclude promulgating a rule. Additionally, EPA documented the reasons for excluding segments of the industry from the analysis at proposal and in this EA.

Several commenters were confused by the presentation of the economic analyses. EPA has substantially rewritten the EA to ensure greater clarity. Some commenters suggested changes to EPA's methodology for analyzing impacts. In most cases, EPA determined that some changes were not warranted. The Agency did change the assumed duration of single-family and multifamily projects. Moreover, EPA now also assumes these projects are not cross-subsidized by other projects underway, as suggested by commenters. EPA also received numerous comments on the elimination of post-construction requirements. These requirements were removed from the draft proposal because the costs of compliance were considered too high. These comments and all others are discussed in detail in EPA's Comment Response Document.

The remainder of this Executive Summary addresses the industry profile (Section ES.2), the regulatory options (Section ES.3), the economic impact methodology (Section ES.4), results of the

economic analyses (Section ES.5), the results of the Final Regulatory Flexibility Analysis (Section ES.6), a summary of the benefits (ES.7), the costs and benefits of the options considered (Section ES.8), and information required under the Unfunded Mandates Reform Act (UMRA) (Section ES.9).

## **ES.2 PROFILE OF THE CONSTRUCTION & DEVELOPMENT INDUSTRY**

Several characteristics of the C&D industry affect the structure of this EA:

- Because individuals (e.g., homebuyers) are often the direct customers of the C&D industry, it is necessary to address issues such as cost passthrough and the impacts of regulations on housing affordability.
- Developers and builders are engaged in complex and varying relationships, resulting in a variety of different business models. Developers might undertake all site improvements and sell completed lots directly to builders, act as builders themselves and remain onsite to build out the development, or some combination of the two.
- The C&D industry is dominated by small businesses. As a result, EPA must carefully consider the impacts on small businesses in accordance with the requirements of the Small Business Regulatory Enforcement Fairness Act (SBREFA).
- C&D activities are highly localized, which suggests that a regional approach to analysis is needed to account for varying market conditions.
- The standard industry definitions include a large number of establishments primarily engaged in remodeling activities and special trades (e.g., plumbing, electrical). These establishments are less likely to be involved in land disturbing activities.

The C&D industry, as defined for this rule, is comprised of four main industry groups that will further affect the structure of this analysis:

- Land development and subdivision
- Residential construction (including single-family and multifamily construction)
- Nonresidential construction (including commercial and industrial construction)
- Heavy construction

These four industry groups are most likely to engage in land disturbing activities.

Land development and subdevelopment (categorized in the North American Industry Classification System [NAICS] as NAICS 2331) accounted for 8,185 establishments, or 3.1 percent of all establishments in the C&D industries. Heavy construction (NAICS 234) includes 42,557 establishments, or 16.3 percent of the total. Of these, 27 percent are primarily highway and street construction contractors; another 27 percent are contractors that work on water, sewer, pipeline, communications and power line projects; and 43 percent are engaged in other types of heavy construction. Within the special trades contractors subsector (NAICS 235), NAICS 23593 (excavation contractors) and 23594 (wrecking and demolition contractors) together account for 19,771 establishments, or 7.6 percent of the C&D industry total. Excavation contractors account for more than 90 percent of these establishments. The number of establishments in the C&D industry total 261,617, although many of these will not be affected by any of the options considered.

The C&D industry is dominated by small establishments—more than 87 percent of establishments employ fewer than 20 employees. Two-thirds of the C&D establishments are organized as corporations, with 25 percent organized as proprietorships. Only 9 percent are organized as partnerships or some other legal form of organization. Geographically, the highest number of establishments per state is found in California. Other states with large numbers of C&D establishments include Texas, Illinois, Michigan, Ohio, Pennsylvania, New York, and Florida. International competitiveness is not an issue in this industry, as construction activities are highly localized.

The C&D industry is estimated to employ nearly 2.4 million people with a payroll totaling \$76.8 billion in 1997. More than half are employed in NAICS 233, except 2331 (building, developing, and general contracting, except land subdivision and land development). The heavy construction sector employs nearly 40 percent of the total. The industry employment figures confirm a highly seasonal employment pattern.

The vast majority of firms in the C&D industry operate only one establishment. Most analyses in this report assume that one firm is equivalent to one establishment. The number of small firms, based on Small Business Administration (SBA) definitions, are estimated to comprise 99.5 percent of all firms in the industry.

Many of the establishments and firms in the C&D industry would have been unaffected by the Final Action, regardless of option chosen, for several reasons. First, potentially affected establishments are those that disturb land. EPA believes that establishments characterized as remodelers would not have been affected regardless of option. Based on the 261,617 establishments estimated for the C&D industries, and subtracting 62,400 remodelers, EPA estimates that 199,217 establishments could have been affected. Options 2 and 4, however, exclude sites where less than 5 acres of land are disturbed. EPA, therefore, assumes that builders of single-family housing making one to four or five to nine starts per year would be unlikely to disturb that much acreage at a single site. Additionally, EPA assumes that multifamily builders constructing two to nine housing units each year are also excluded from coverage under these options on this basis. Finally, EPA also assumes special trade contractors (such as plumbers and electricians) would be unlikely to disturb land and would not be the responsible party for NPDES permitting purposes because they typically act as subcontractors. EPA's count of potentially affected establishments under Options 2 or 4 is 114,170.

### **ES.3 DESCRIPTION OF THE REGULATORY OPTIONS**

EPA is authorized under the Clean Water Act (CWA) to promulgate ELGs. Under this authority, EPA considered Best Practicable Control Technology Currently Available (BPT), Best Available Technology Economically Achievable (BAT), Best Conventional Pollutant Control Technology (BCT), and New Source Performance Standards (NSPS) requirements.

EPA considered four regulatory options, of which two (Options 2 and 4) were designed to implement ELGs. These four options were described in detail in Section ES.1.

### **ES.4 ECONOMIC IMPACT ANALYSIS METHODOLOGY**

EPA has undertaken a wide range of impact analyses in this EA. Many of these multi-level, economic analyses measure impacts that might be associated with options considered for this Final Action from several perspectives (e.g., the builder or the consumer). Alternatively, in some cases, multiple analyses are used to provide varied approaches for estimating similar impacts. EPA uses several

models and modeling systems, discussed in the following sections, for measuring economic impacts. The impacts analyzed are divided into two major groups: 1) impacts on the individual projects, establishments, and firms in the construction industries, and 2) impacts at the national level and on the national economy.

EPA employs methods and models for economic analyses that are used daily in the marketplace by business, government, and industry. For example, in estimating the economic impacts of costs of the regulatory alternatives on businesses, EPA uses, among many others, formulas and methods similar to those used by a mortgage banker to estimate the monthly mortgage on a new home. These formulas and methods can be used to replicate the results in this economic analysis or to conduct independent analyses of the impacts of the options considered in this document, or any other options.

EPA has made several assumptions to run the various models and modeling systems concerning the ability of the construction industry to pass through costs to the retail market and consumers. These assumptions vary depending on the analysis run by each model or modeling system. These assumptions fall into three categories regarding cost passthrough scenarios:

- The industry can pass through 100 percent of the costs of compliance. Analyses using this type of assumption measure the worst-case impacts on consumers.
- The industry can pass through none of the costs. This results in an analysis measuring the worst-case impacts on the industry.
- The industry can pass through some of the costs—a realistic cost passthrough assumption based on market conditions. In this scenario, some costs fall on consumers, and some on the industry. The types of cost passthrough assumptions used in each model or modeling system are discussed in the following sections.

Before the specific impact methodologies and the models and modeling systems are discussed, we summarize how the incremental compliance costs were calculated and applied in the economic impact analysis. The remainder of this section discusses two levels of modeling used in the impact analysis—industry level (two modeling systems) and national level (four major models/modeling systems). This section also discusses the final calculation of total social costs.

#### **ES4.1 Use of Engineering Costs in the Impact Analyses**

EPA's engineering cost analysis produced incremental costs in each state. Within each state, EPA estimated costs for six site sizes and four major land-use types identified as potentially affected, for a total of 24 subtotaled costs in each of the 50 states. The site sizes modeled used 0.5, 3, 7.5, 25, 70, and 200 acres (zero costs were assigned to the 0.5-acre sites for all options discussed in this EA). The land use types included single-family housing, multifamily housing, commercial construction, and industrial construction. The derivation of these costs can be found in EPA's Development Document for the Effluent Guidelines for the Construction and Development Point Source Category (Technical Development Document).

In most cases, EPA had insufficient data to model separate projects and firms for the 50 states in the economic analysis. In response to insufficient data, EPA created weighted average costs per acre on a national basis. For one of the market modeling approaches, however, EPA was able to use the state-by-state data.

EPA developed four sets of cost inputs for the economic analyses based on the engineering costs. One set used the total engineering costs of the inspection and certification requirements in Option 2, calculated by site size and construction type, divided by all acres estimated to be disturbed annually (by site size and land use type).

Another set used the total engineering cost of the CGP codification cost component in Options 2 and 4, also calculated by site size and land use type. These incremental costs were divided by the number of acres estimated to be developed annually (by site size and land use type) in states whose stormwater regulations were not considered to be equivalent to the CGP requirements. This approach created two tiers of costs. Construction projects in most states face only the relatively low inspection and certification costs, since the relevant state regulations match the CGP requirements (the "equivalent states"). Construction projects and firms in a few states, however, face the higher costs of meeting the inspection and certification costs combined with the costs of meeting the CGP-based requirements in Option 2, or the costs of meeting the CGP-based requirements in Option 4.

A third set of costs used the total engineering costs of each option divided by the total estimated number of acres disturbed annually to produce an overall national average cost per acre by site size and industry type. Certain models were able to use the overall national average costs (e.g., the total compliance cost model), but others used the costs per acre as adjusted by state equivalency determinations to avoid, for example, underestimating impacts on individual firms in nonequivalent states.

The last set of costs used the state-by-state total engineering costs divided by the acres disturbed in each state. EPA was able to run one market analysis at this level of detail.

## **ES4.2 Industry-Level Analyses**

EPA developed two analyses at the industry level—an analysis of impacts on construction projects and an analysis of impacts on construction firms. These analyses are conducted using two modeling systems:

- EPA's C&D Project Model System (C&D/PrMS), which measures impacts on construction projects, including those on builder profits and house prices.
- EPA's C&D Firm Model System (C&D/FrMS), which measures potential impacts on firms (in terms of identifying changes in financial conditions associated with the options that might lead to financial stress). It also identifies the number of employees that might be affected at potentially financially stressed firms.

### ***ES4.2.1 C&D Project Model System***

EPA's C&D/PrMS is composed of a number of model C&D projects, each simulating the cash flow of a C&D project for a certain site size and land use type. The matrix of six site sizes and four land use types produce a total of 24 models. The cost inputs to the C&D/PrMS are the national average per-acre costs by land use and project size. EPA uses these costs in this analysis because overall national average changes in project financials are being calculated. When EPA inputs these costs into the C&D/PrMS, the Agency can compute impacts at a wide variety of construction projects. For each type

of construction project and site size, the average cost per acre for that project is input into a model that simulates all of the costs of constructing that model project. The per-acre costs are multiplied by the acreage associated with the site size (e.g., 7.5 acres is the acreage at a 7.5 acre site) to estimate a cost per site. The increased cost then affects other cost items throughout a model project and can be measured as either a change in the builder's asking price for a new house (assuming 100 percent cost passthrough to consumers) or a change in the profitability of the project assuming the builder absorbs all incremental costs (zero cost passthrough). The model also estimates multipliers that are used in other analyses. Using the Opportunity and Interest Cost Multiplier, EPA can estimate the costs per acre, plus opportunity and interest costs per acre (costs associated with self-financing or loans due to increased compliance costs). Using the Total Cost Multiplier, EPA can estimate costs per acre, plus all additional components (opportunity costs, interest costs, profit, and overhead) that contribute to the final asking price changes. The former multiplier is particularly important for calculating the total costs of compliance, since the costs represented by this multiplier must be included with the total engineering costs of compliance that are estimated by the engineering cost models. The latter multiplier is important for estimating the total impact on consumers and the economy as a whole.

#### ***ES4.2.2 C&D Firm Model System***

EPA's C&D/FrMS comprises a number of model C&D firms, each simulating the income statement and balance sheet for a C&D firm of a certain size, measured as numbers of starts (or units) per year and land use type. The cost inputs to the C&D/FrMS are the per-acre costs for the inspection and certification cost components over all developed acres and the per-acre costs for the CGP cost components over the developed acres in nonequivalent states. This approach allows EPA to better estimate the number of firms that might experience financial stress, taking into account whether they are located in a high-cost or low-cost state. The model system is run twice—once at the low cost per acre and once at the high cost per acre. The impacts on firms in terms of numbers of firms estimated to experience financial distress are then calculated based on the percentage of firms located in low cost states versus those located in high cost states.

These costs are used by the C&D/FrMS to compute impacts at the level of the construction firm. Costs per acre by site size are multiplied by the number of acres per construction start and the number of

starts assumed for each model firm (by industry type) to estimate a compliance cost for each firm. Each of the four types of firms (single-family, multifamily, commercial, and industrial construction firms) are investigated. The firm costs are used in the C&D/FrMS to yield information on changes in firm-level financial ratios.<sup>1</sup> These changes are then used to determine numbers of firms that might experience financial stress as a result of incremental option costs and numbers of employees at firms potentially experiencing financial stress. These costs can also be compared to total and current assets of the model firms to determine if a barrier to entry by new firms might be present. Later, these firm-level costs are also used to determine impacts on small businesses.

The firm-level analysis uses two cost passthrough assumptions to gauge worst-case impacts (the zero cost passthrough assumption) and realistic impacts (a market-based cost passthrough assumption).

### **ES.4.3 National-Level Analyses**

The methodologies for most of the national-level analyses are divided into several types and are implemented using a number of models and modeling systems:

- The Total Compliance Cost Model estimates national compliance costs to industry.
- The Consumer Impact Model analyzes impacts on consumers that are driven by the potential for price increases for single-family homes.
- The C&D Partial Equilibrium Market Model System (C&D/PEqMMS), which comprises three modules, uses partial equilibrium market models to measure impacts in C&D markets:
  - Module 1 is the National Housing Market Module, which estimates changes in prices and quantities in the housing sector markets.
  - Module 2 is the Regional Market Model Module, which estimates changes in prices and quantities in the non-housing sectors and also estimates the numbers of households priced out of the housing market.

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<sup>1</sup> EPA could not use an Altman's Z approach for assessing the interactions of these financial ratios to determine financial stress for this EA. Altman has developed ratio coefficients for the manufacturing (public and private) and the service sectors only. These coefficients would not be valid for the C&D industries. See Chapter Four for more information.

- Module 3 is the Net Economic Impact Model, which estimates impacts on the national economy as a whole, calculating changes in price and quantity in all sectors and estimating the losses in output and employment.
- The Government Impact Model, which estimates total costs to governments.

Generally these models and modeling systems use the national-level costs per acre, since they are either computing national-level costs or are estimating changes in national-level markets. Other than the simpler aggregated cost calculations, they use only the market-driven (realistic) cost passthrough assumptions, since market-based impacts are being measured in most of these analyses. Selected outputs of these models are then combined to calculate the total social costs associated with each option. The models and modeling systems listed above are discussed in more detail in the following sections.

#### ***ES4.3.1 Total Compliance Cost Model***

To compute the total compliance costs to industry, EPA uses the national average cost per acre computed over all developed acres (by land use type and project size) adjusted by the opportunity and interest cost multipliers calculated by the C&D/PrMS. These costs are multiplied by the total number of acres estimated to be developed annually by project size and land use type. When these costs are aggregated, EPA determines the total cost to the construction industry of each option under consideration. EPA's Total Compliance Cost Model calculates costs by industry type, and the total cost or the total cost by sector becomes an input to many of the remaining national-level analyses.

#### ***ES4.3.2 Consumer Impact Model***

The Consumer Impact Model uses the national average cost per acre for each site size in the single-family land use type divided by the number of lots per acre assumed. These costs are adjusted by the Total Cost Multiplier calculated by the C&D/PrMS to judge the impact of the increase in residential housing price on the median-priced home. The model calculates the change in income that would be needed to qualify for a home mortgage at the new price and the number of households that no longer qualify for a house at that price, assuming standard lending practices.

#### ***ES4.3.3 C&D Partial Equilibrium Market Modeling System***

EPA undertakes an analysis of the national housing market as well as a regional-level analysis of the markets for single-family, multifamily, commercial, and industrial construction using partial equilibrium models of these markets. EPA also determines the net economic impacts in the overall U.S. economy. These analyses are incorporated into three modules that make up EPA's C&D/PEqMMS. The first module, the National Housing Model, uses the total costs for the single-family sector output by the Total Compliance Cost Model. The Regional Market Modeling Module (the second of the C&D/PEqMMS modules) uses the state-by-state compliance costs per acre for each sector. These two components estimate output changes at the industry level. The last component of the C&D/PEqMMS is the Net Economic Impact Model. This module is discussed in more detail in the following section.

#### ***ES4.3.4 Net Economic Impact Model***

Compliance costs have a ripple effect on the U.S. economy, resulting in both positive and negative impacts on production and employment in various sectors, both within and outside of the construction industries. The third module of the C&D/PEqMMS, the Net Economic Impact Model, uses the results of the partial equilibrium models (expressed as changes in industry output), as described above, and economic input-output multipliers developed by the Bureau of Economic Analysis. Where EPA has calculated results on both the national-level and regional levels (housing sectors only), EPA uses the national-level results, since the regional-level data are more limited in scope. Economic multipliers indicate the degree to which declines in construction activity will have a ripple effect causing declines in employment in the construction industry and declines in output and employment in other industries. Meanwhile, other parts of the economy (e.g., suppliers of ESCs) gain output and employment. The impacts of compliance are thus measured as both gains and losses in output and gains and losses in employment across the national economy. These gains and losses generally balance each other, but some overall loss to the national economy does occur. This loss is called the deadweight loss, which contributes to the overall social cost of a regulation. The outputs of the Net Economic Impact Model are the change in employment and output in the national economy and an estimate of the deadweight loss.

#### ***ES4.3.5 Government Impact Analysis***

EPA estimates government impacts using costs that were derived separately from the costs discussed in the previous section. EPA did not re-evaluate government administrative costs. They remain the same as those shown at proposal. EPA developed government costs by estimating the costs associated with establishing or modifying permitting programs to reflect the requirements of the options considered as well as new or increased costs related to permit processing. EPA added to these costs an estimate of costs to various levels of government of complying with the options under consideration (governments at all levels undertake construction projects themselves). The total of the administrative costs of permitting and other activities and the compliance costs estimated to apply to government are the total costs to government.

#### **ES.4.4 Estimate of Social Costs**

The final analysis EPA performs with the cost inputs is estimating total social cost. The total social costs are calculated by adding the total compliance costs to industry, the total costs to governments, and the total deadweight loss, calculated as discussed.

### **ES.5 ECONOMIC IMPACT ANALYSIS RESULTS**

Results are reported here only for Option 2, which has higher costs than Options 1 and 4. Option 3 results in no costs. Costs are reported in year 2002 dollars. Costs in the remainder of the Economic Analysis are reported in year 2000 dollars.

#### **ES5.1 Costs per Acre**

Cost per acre for Option 2 range, in the “low cost” (equivalent) states, from \$0 to \$340, depending on size of project and construction type. The highest cost per acre in the single-family

housing sector is \$259/acre. In the “high cost” (nonequivalent) states, costs range from \$0-\$921/acre. The highest cost per acre in the single-family housing sector is \$686/acre in nonequivalent states.

### **ES5.2 Impacts on Projects**

Impacts on projects are calculated under a 100 percent cost passthrough assumption to measure impacts on consumers and under a zero cost passthrough assumption to measure impacts on industry profits. Under Option 2, the average percent change in project price from the buyer’s perspective, assuming all costs are passed through to the consumer, is at most 0.19 percent (in the single-family and industrial land use projects). The assumption of zero cost passthrough results in an estimated maximum decline in project profits of 1.67 percent in the single-family and industrial land use projects.

### **ES5.3 Impacts on Firms**

The estimated number of firms expected to experience financial stress under Option 2 is estimated to total 258 firms (0.3 percent of all firms), assuming no costs can be passed through to consumers. Assuming a realistic cost passthrough, however, an estimated 31 firms (0 percent) are expected to experience financial stress. Depending on passthrough assumptions, a total of 673 to 5,178 employees (0.0 to 0.4 percent of all employees in the affected industries) might be affected at the financially stressed firms.

Compliance costs represent a maximum of 1.7 percent of the estimated assets at representative firms. Based on this finding, EPA concludes that Option 2 would not have produced any barriers to entry.

### **ES5.4 National Compliance Costs**

The total national compliance costs of Option 2 in 2002 dollars is \$583.9 million. On a per-unit basis, this is \$112 per house and no more than \$0.04 per square foot in the other construction types under Option 2. These numbers do not show the share of costs split between consumers and industry, however.

### **ES5.5 Market Model Results**

Using the Consumer Impact Model, EPA estimates that, under a realistic cost passthrough assumption, buyers will need an additional \$45 (2002 dollars) of income to qualify to purchase the median-priced new house under Option 2. Assuming income is fixed, this would result in a decline in the number of households that can afford the median-priced house of 0.09 percent.

Using the C&D/PEqMMS and market-based cost passthrough assumptions, EPA estimates that under Option 2, the price change of a single-family residence is \$65, resulting in a decline in number of houses produced annually of 157 units. This is a total loss of output to the construction industry of \$52.1 million.

EPA also uses the C&D/PEqMMS to determine impacts on regional markets. These markets are measured in terms of a rough housing opportunity index, which measures the percentage of households in a region that can afford the median-priced house in that region. Option 2 results in a maximum change in this percentage of 0.23 percent in the East North Central Region.

The C&D/PEqMMS is also used to compute price, quantity and output changes for the multifamily, commercial and industrial sectors. Option 2 results in a \$75 increase per multifamily unit, with 115 fewer units being built, for an overall output loss of \$15.8 million. Commercial space price rises by \$0.06 per square foot, resulting in 509 fewer project starts and an output loss of \$275.5 million. Industrial space price rises by \$0.08 per square foot, leading to 144 fewer project starts and an output loss of \$26.2 million.

### **ES5.6 Net Economic Impacts**

Based on market modeling results discussed in the previous section, EPA computes the national-level changes in output and employment using an input-output modeling approach. For Option 2, EPA estimates that total output losses will be \$369.6 million (2002 dollars) and the net change in employment will be 2,552 jobs lost. Total deadweight losses to the economy associated with the changes in social

welfare (consumer welfare losses that are not transfers to producer welfare) are estimated to be approximately \$1 million under Option 2.

When broken down on a state basis, output losses range from \$0 among several states to \$31.5 million in Michigan. Only 14 states would have lost more than \$10 million in output under Option 2.

#### **ES5.7 Impacts on Governments**

EPA estimates that Option 2 would have resulted in an additional \$0.3 million cost to governmental units for establishing new permit requirements. Of the total aggregate costs of compliance, 24.7 percent, or \$144.2 million (2002 dollars), would have ultimately fallen on governments that undertake their own construction projects.

#### **ES5.8 Additional Impacts**

EPA's Final Action to not establish new regulations does not have any costs or benefits. However, since the regulatory options considered could be defined as a significant regulatory action under Executive Order 12866, EPA has provided a cost-benefit chapter to address the requirements of this Executive Order.

EPA estimates the Final Action will not disproportionately affect minority or low-income populations, nor will it have disproportionately high human health or environmental effects. It also will not have a significant effect on children's health. This finding would also have been true for Options 1, 2, and 4.

### **ES.6 FINAL REGULATORY FLEXIBILITY ANALYSIS**

The final regulatory flexibility analysis (FRFA) requires several issues to be addressed: 1) the need for the regulation, 2) issues raised by public comments, 3) steps used to minimize impacts on small

entities, 4) an estimate of numbers and types of small entities affected, and 5) a description of reporting, record keeping, and other compliance requirements.

EPA is authorized to promulgate effluent guidelines and standards under the Clean Water Act. EPA can choose to regulate or not to regulate discharge of pollutants from the C&D industry pursuant to a consent decree in *NRDC et al. V. Reilly* (D.D.C. No. 8902980, January 31, 1992). As such, EPA is able to consider either promulgating effluent guidelines or determining that no action is necessary.

Significant issues raised in comment include concerns that the smallest firms would be greatly affected. EPA disagrees because none of the options considered will affect firms that disturb less than 5 acres of land. These firms tend to be the smallest firms in the affected industries. Some commenters believe that EPA did not present the SBREFA Panel conclusions and descriptions of outreach and that no impact results for small business were presented. EPA disagrees. The SBREFA Panel conclusions and descriptions of outreach are provided in the rulemaking record, and Section 6.4 of the EA for the proposal presents the small business impact analysis. A few commenters disagreed with EPA's use of housing starts cutoffs as a proxy for the number of acres disturbed to eliminate builders from the count of affected firms. EPA continues to believe these cutoffs are pertinent and has not systematically underestimated the numbers of small businesses affected. One commenter suggested EPA only consider sites greater than 5 acres. EPA's Final Action will not affect sites of any size.

EPA took several steps to minimize impacts in each of the options considered. Option 2 is designed to minimize impacts on small business by only covering sites where 5 acres of land or more are disturbed. By designing Option 2 to codify the CGP, EPA designed an option that is similar to the provisions in most states' regulations, leaving few firms potentially affected by incremental requirements. Option 4 further reduces impacts on small business by eliminating the inspection and certification requirements. Option 3, EPA's selected option, which continues the implementation of the existing NPDES regulations, imposes no incremental requirements on any firms.

EPA used SBA definitions of small firms and identified the number of small firms using distributions of numbers of establishments by revenue size classes, using the assumption that number of establishments are equivalent to numbers of firms based on ratios of numbers of establishments to firms in the key industries. Based on this approach, EPA estimates that 69,970 small firms would have been

potentially affected by either Option 2 or Option 4, of which only 18,554 are located in states considered to be nonequivalent states (that is, they will face the higher CGP codification cost components). This is only about 27 percent of all small firms that would have been potentially affected by either Option 2 or 4. The majority of these firms are in the commercial and institutional building construction industry (59 percent), with only 15 percent each in the single-family housing sector and heavy construction sector, 10 percent in the industrial construction sector, and 2 percent in the multifamily housing sector.

Option 2 contains record keeping and reporting requirements for entities in the C&D industry. The maintenance of a site log is a significant record keeping and reporting requirement. EPA estimates that maintaining site logs would have entailed 8.7 hours of labor annually at an average annual cost of \$335 for each firm. Some states would also have incurred some costs related to implementing Option 2 or 4. EPA estimates approximately 200 hours per state would be required to implement these options.

EPA also undertook an analysis of small business impacts. The analysis relies on the C&D/FrMS using a subset of the model firms that represent firms making fewer than 500 starts per year. EPA uses the standard revenue test methodology for identifying impacts on small firms and develops revenue distributions to allow for a range of revenues that might be possible at the modeled small firms. This approach provides EPA with low and high estimates of potential impact. The impacts are calculated based both on zero cost passthrough (the worst-case analysis) and market-based “realistic” cost passthrough. In the worst-case analysis, the maximum number of small firms with costs exceeding 1 percent of revenues under Option 2 is estimated to be 1,884, or 1.4 percent of all small firms. Under the realistic cost passthrough assumption, the maximum number of small firms with costs exceeding 1 percent of revenues is estimated to be 231, or 0.2 percent of all small firms.

## **ES.7 BENEFITS**

EPA modeled stormwater discharges from construction sites to estimate the change in sediment reaching waterways as a result of implementing Option 4. EPA created separate models for each state, ecoregion, and soil type combination. The models indicated Option 4 would reduce sediment loads by 0.8 million metric tons each year. This change was input to National Water Pollution Control Assessment Model (NWPCAM), which is a national surface-water quality model that simulates water quality

improvements and economic benefits that result from water pollution control policies. NWPCAM incorporates a water quality model and monetary benefits estimation routine to conduct national policy simulations.

NWPCAM simulations indicated that total suspended sediment would be reduced in 9,303 stream miles as a result of Option 4. Total suspended sediment is one element of a six-parameter water quality index. EPA relates changes in the water quality index to household willingness to pay for changes in water quality derived from a 1993 survey by Carson and Mitchell. EPA estimates that the public would have been willing to pay \$15.2 million (2002 dollars) for the water quality changes that would have resulted from Option 4. An alternative analysis based on a water quality ladder interpretation of the Carson-Mitchell survey estimated a public willingness to pay of \$28.4 million.

In addition to the benefits estimated by NWPCAM, the regulation would have generated additional benefits that could not be easily quantified. EPA's Final Action does not generate any benefits or costs.

## **ES.8 COSTS AND BENEFITS OF THE REGULATORY OPTIONS**

EPA is required under Executive Order 12866 to perform a cost-benefit analysis of a major rule, which is one in which costs to all parties exceed \$100 million per year. Because Options 2 or 4 might have costs exceeding \$100 million per year, EPA undertook a cost-benefit analysis. EPA first estimated the total social costs of the options by adding the total compliance costs to industry, the costs to government agencies and the deadweight losses to society. Option 2 is expected to result in total social costs of \$585.2 million per year. As discussed in Section ES.7, the total benefit of Option 2 is at least \$15.2 million per year. Option 4 results in total social costs of \$379.1 million per year and realizes benefits of \$15.2 million per year. Option 3, the no-action option, results in no costs and no benefits.

## **ES.9 UNFUNDED MANDATES REFORM ACT**

EPA is required to determine impacts of federal mandates that might result in expenditures to state, local, and tribal governments, in the aggregate, or to the private sector, of \$100 million or more in any one year. The preceding analyses provide impact results on the private sector. EPA estimates impacts on governments here.

Had Option 2 or 4 been chosen, EPA estimates that governments would have incurred costs totaling \$144.2 million or \$93.4 million per year (2002 dollars), respectively. EPA compared local government share of compliance costs against several financial indicators to determine impacts on small governmental units (since they are the most sensitive to the costs imposed by the regulatory options). The indicators used were total revenues, capital outlay, and capital outlay for construction only. In all cases, compliance costs were less than 0.21 percent of any one of the financial measures, indicating no significant impacts on even the smallest governmental units from either Option 2 or 4.